

Message Text

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E.O. 11652: GDS

TAGS: ETEL, NATO

SUBJECT: HIGH SPEED CRYPTO EQUIPMENT FOR NATO

REF: A) USNATO 3617 DTG 080944Z JUL 75

B) DG NICMSA 041335Z JUL 75

1. US NATIONAL HIGH-SPEED CRYPTOGRAPHIC EQUIPMENT HAS US STANDARD NRZ INTERFACE COMPATIBLE WITH BALANCED LOW LEVEL DIGITAL INTERFACE REQUIREMENTS OF MIL-STD-186-100. TO INCORPORATE BOTH BIPOLAR AND NRZ INTERFACE SPECIFICATIONS AS A REQUIREMENT WILL INCREASE BOTH EQUIPMENT COST AND COMPLEXITY. NRZ SIGNAL PROVIDES BETTER PERFORMANCE IN PRESENCE OF NOISE THAN BIPOLAR SINCE THREE STATES MUST BE DETECTED IN BIPOLAR FORMAT AS OPPOSED TO TWO STATES IN NRZ. CONVERSION OF NRZ INTERFACE SIGNALS WITHIN THE KEY GENERATOR TO A BIPOLAR CODE IS UNNECESSARY

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AND COSTLY. DUAL CAPABILITY WILL COST AN APPROXIMATE ADDITIONAL 2,000 DOLLARS IF IT IS DONE INTERNAL TO THE EQUIPMENT AND ABOUT 3,000 DOLLARS FOR A PLUG-IN MODULE CAPABILITY. SINCE BOTH RED AND BLACK SIDES OF EQUIPMENT

INTERFACE MUST BE CONVERTED FROM NRZ TO BIPOLAR, TYPICAL
PROBLEMS OF COMPROMISING EMANATIONS MUST BE CONSIDERED IN
THE DESIGN INCLUDING COSTLY FILTERED AND REGULATED RED

POWER.

2. WE WILL CONTINUE TO RECOMMEND NRZ INTERFACE FOR NATO
HI SPEED EQUIPMENT. IF IT BECOMES NECESSARY TO INTER-
FACE TO A BIPOLAR CODE FORMAT, THE CONVERSION SHOULD
BE DONE IN A SEPARATE EQUIPMENT (MODEM). THE REQUIRE-
MENT FOR THIS CONVERSION CAN BE HELD TO A MINIMUM BY
SPECIFYING A DIGITAL NRZ INTERFACE FOR THE MULTIPLEX
AND OTHER EQUIPMENT WHICH MUST INTERFACE WITH HI SPEED
EQUIPMENT. THUS THE COST OF KEY GENERATOR IS NOT INCREAS-
ED AND TOTAL COST OF THE SYSTEM IS ONLY INCREASED IN THOSE
CASES WHERE IT IS NECESSARY TO INTERFACE AN EQUIPMENT
WITH A BIPOLAR CODE FORMAT.

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